

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION



**MISSOURI STATE OPERATING PERMIT**

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92<sup>nd</sup> Congress) as amended,

Permit No. MO-0028037

Owner: City of Nixa  
Address: P.O. Box 395, Nixa, MO 65714

Continuing Authority: Same as above  
Address: Same as above

Facility Name: Nixa Wastewater Treatment Plant  
Facility Address: Old Riverdale Public Road, Nixa, MO 65714

Legal Description: Plant Site - SW  $\frac{1}{4}$ , SE  $\frac{1}{4}$ , Sec. 24, T27N, R22W, Christian County  
Outfall #001 - SE  $\frac{1}{4}$ , NW  $\frac{1}{4}$ , Sec. 30, T27N, R21W, Christian County

Latitude/Longitude: +3700480/-09316262

Receiving Stream: Finley Creek (P)  
First Classified Stream and ID: Finley Creek (P)(02352)  
USGS Basin & Sub-watershed No.: (11010002-030004)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

**FACILITY DESCRIPTION**

Outfall #001 - POTW - SIC #4952

Oxidation ditches/tertiary filters/ultraviolet disinfection/chemical phosphorus removal/sludge holding tank/sludge composting/sludge and/or compost is land applied.

Design population equivalent is 40,000.

Design flow is 4.0 MGD. Peak flow is 11.5 MGD.

Actual flow is 1.0 MGD.

Design sludge production is 1,317 dry tons/year.

Actual sludge production is 169 dry tons/year.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

June 25, 2004

Effective Date

  
Stephen M. Mahford, Director, Department of Natural Resources  
Executive Secretary, Clean Water Commission

June 24, 2009

Expiration Date  
MO 780-0041 (10-93)

Jim Hull, Director of Staff, Clean Water Commission

<b>A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS</b>					PAGE NUMBER 2 of 11	
					PERMIT NUMBER MO-0028037	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001</u>						
Flow	MGD	*		*	once/weekday*****	24 hr. total
Biochemical Oxygen Demand <sub>5</sub> **	mg/L		45	30	once/week	24 hr. composite
Chemical Oxygen Demand	mg/L	*		*	once/week	24 hr. composite
Total Suspended Solids**	mg/L		45	30	once/week	24 hr. composite
pH - Units	SU	***		***	once/week	grab
Fecal Coliform (Note 1)	#/100mL	1000		400	once/week	grab
Specific Conductance	umhos/cm	*		*	once/week	grab
Dissolved Oxygen	mg/L	*		*	once/week	grab
Ammonia as N (June 1 - September 30) (October 1 - May 31)	mg/L	3.0 4.0		3.0 4.0	once/week	grab
Total Phosphorus	mg/L	*		0.5	once/month	24 hr. composite
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>August 28, 2004</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
<b>B. STANDARD CONDITIONS</b>						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I, II &amp; III</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

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		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Influent Monitoring</u>						
Flow	MGD	*		*	once/weekday****	24 hr. total
Biochemical Oxygen Demand <sub>5</sub>	mg/L	*		*	once/week	24 hr. composite
Chemical Oxygen Demand	mg/L	*		*	once/week	24 hr. composite
Total Suspended Solids	mg/L	*		*	once/week	24 hr. composite
pH - Units	SU	*		*	once/weekday****	grab
Specific Conductance	umhos/cm	*		*	once/weekday****	grab
Temperature	°F	*		*	once/weekday****	grab
Dissolved Oxygen	mg/L	*		*	once/weekday****	grab
<u>Instream Monitoring</u> 100 yds above & below discharge						
Dissolved Oxygen	mg/L	*		*	once/week	grab
Biochemical Oxygen Demand <sub>5</sub>	mg/L	*		*	once/month	grab
Total Suspended Solids	mg/L	*		*	once/month	grab
Specific Conductance	umhos/cm	*		*	once/week	grab
pH - Units	SU	*		*	once/week	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>August 28, 2004</u> .						
Whole Effluent Toxicity (WET) Test	% Survival	See Special Conditions			Once/year in July	24. Hr composite
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>October 28, 2004</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
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MO 780-0010 (8/91)

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)**

- \* Monitoring requirement only.
- \*\* This facility is required to meet a removal efficiency of 85% or more.
- \*\*\* pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.
- \*\*\*\* Once/weekday means: Monday, Tuesday, Wednesday, Thursday and Friday.

Note 1 - Final limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31.

C. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
  - (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
    - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
    - (2) controls any pollutant not limited in the permit.
  - (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
  - (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

2. All outfalls must be clearly marked in the field.
3. Permittee will cease discharge by connection to areawide wastewater treatment system within 90 days of notice of its availability.
4. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
    - (1) One hundred micrograms per liter (100 µg/L);
    - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
    - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
    - (4) The level established in Part A of the permit by the Director.
  - (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.
5. Report as no-discharge when a discharge does not occur during the report period.
  6. Response to slug loading or plant upset  
If the plant experiences a slug load of an unknown substance or an upset which causes the characteristics of the plant to change by a factor greater than 40 % then grab samples shall be immediately collected from the influent, effluent and mixed liquor and those samples will be subjected to a priority pollutant scan. A report shall be filed with the Southwest Regional Office of the Missouri Department of Natural Resources with 48 hours of the event.

C. SPECIAL CONDITIONS (continued)

7. General Criteria. The following water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
  - (a) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
  - (b) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
  - (c) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
  - (d) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
  - (e) There shall be no significant human health hazard from incidental contact with the water;
  - (f) There shall be no acute toxicity to livestock or wildlife watering;
  - (g) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
  - (h) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.
8. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities
  - (a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.
  - (b) If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids that are removed from the domestic wastewater treatment lagoon during lagoon clean-out and maintenance activities. Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids from the lagoon. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.
9. Random industrial sampling

The city shall continue a program of sampling of industrial contributors to the wastewater stream. Samples shall be of the 24 hr. composite type. Frequency of sample collection shall be at least one sample of each industrial contributor per year. Each sample shall be subjected to the same analysis as the influent samples. The city shall submit an annual report of the results of the industrial sampling program which includes the sample result worksheet provided by the laboratory doing the sample analysis.
10. Inspection of industrial facilities

The city shall make an annual inspection of all industrial facilities located within the city limits and those outside the city limits that are connected to the city collection system. The inspection shall at a minimum identify all non-domestic sources of wastewater, any toxic chemicals stored on site and include an evaluation of the potential for spillage into the city collection system. The reports shall be due each January 1.

C. SPECIAL CONDITIONS (continued)

11. Sewage Sludge Composting Requirements for General Public Use

a. Applicability.

A sewage sludge compost product will be considered suitable for general public use when the permittee meets the requirements under this permit special condition. General public use means the compost is suitable for all types of crops and vegetation including use in residential areas, public use areas and for horticulture, silviculture and agricultural uses.

b. Other Environmental Regulations.

This permit does not pertain to requirements under any other environmental laws and regulations. For information on applicable requirements under the Missouri Solid Waste Management Law, Chapter 260, RSMo. and regulations, contact the Solid Waste Management Program at (573) 751-5401. For general information on other environmental regulations, contact the Technical Assistance Program at (573) 526-6627.

c. Composting Facility Description.

- (1) Some or all of the sludge produced on-site will be composted at the domestic wastewater treatment plant. Composting must be conducted on an impermeable base, which may be made of asphalt, concrete, compacted earth, or other materials and shall comply with the permeability limitations under 10 CSR 20-8.020(13)(A)4.
- (2) Raw materials will consist of dewatered sewage sludge or biosolids, wood chips, yard waste or other similar organic materials. All sludge and biosolids shall be stored under roof or other suitable impermeable cover and on an impermeable base as described in c.(1) above.

- d. Department permitting and tracking of land application sites will not be required if the compost product obtains and maintains a valid registration as a fertilizer under the Missouri Fertilizer Law, Section 266.291-266.351, RSMo. and regulations.
- e. If the compost is to be distributed to the public it shall meet the Class A requirements for pathogen reduction by having undergone one of the Processes to Further Reduce Pathogens found in Appendix B of 40 CFR 503.
- f. Odor control will be provided as necessary to prevent nuisance conditions and to comply with requirements under the Missouri Air Conservation law and regulations.
- g. The permittee will develop and maintain a detailed operations plan for the composting process. This may include references to publications such as the Compost Facility Operating Guide, October, 1994, The Composting Council, 114 South Pitt Street, Alexandria, Virginia 22314 and subsequent revisions.

C. SPECIAL CONDITIONS (continued)

11. Sewage Sludge Composting Requirements for General Public Use (continued)

h. Information Sheet for Users.

An information/instruction sheet shall be provided to each user of compost to provide information on the origin of the compost, appropriate application rates and other pertinent information for proper handling and use of the compost. A copy of the information sheet shall be submitted to the department for review and approval within 30 days after permit issuance.

i. Annual Use Rate.

Compost that is land applied by the permit holder on an annual basis shall not exceed the most restrictive of the following criteria:

- (1) Application rates shall not exceed the annual plant available nutrient requirements for nitrogen and phosphorus based on the vegetation to be grown, a realistic crop yield goal, soil testing results and testing of the compost for nutrient content.
- (2) Application rate shall not exceed 20 dry tons per acre.

j. One Time or Occasional Use Rates.

Compost that is used for soil amendments or land reclamation shall not exceed a total of 200 dry tons per acre on either a one time basis or a cumulative total over a five year period. Subsequent application rates shall not exceed the annual use rate listed above. The compost shall be incorporated into the soil by tillage practices as soon as practical after application.

k. Temperature at several locations in each compost pile shall be measured and recorded at least two (2) times per day.

l. Final Compost Monitoring.

Composite samples of the final compost product shall be collected at representative locations and monitored as described below. Composite samples shall consist of not less than seven discrete subsamples.

- (1) Test at least one composite sample from each individual curing pile for fecal coliform. The geometric mean for fecal coliform shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis) in accordance with 40 CFR 503.32(a)(7). The geometric mean shall be based on at least seven sample results from each batch of compost.
- (3) Test at least one sample per year for the ten metals listed in WQ-425 Table 2. Each composite sample shall consist of multiple grab samples from several different compost piles collected over a four to five month period.
- (4) Test at least one sample every two years for the Priority Pollutants listed in 40 CFR 122.21 Appendix D, Tables II and III

C. SPECIAL CONDITIONS (continued)

11. Sewage Sludge Composting Requirements for General Public Use (continued)

m. Records and Reporting Requirements.

- (1) Time, locations and results shall be recorded for each monitoring requirement and maintained for at least five years. Copies of these records shall be made available to the department upon request.
- (2) The total quantity of compost given away must be recorded.
- (3) An annual report shall be submitted by January 28 summarizing compost activities, monitoring. A copy of the individual laboratory reports and daily records need not be submitted unless requested by the department. The reports shall be submitted to the appropriate department regional office and EPA Region VII office as part of the annual sludge report in permit Standard Conditions Part III.

n. Composted sewage sludge that does not meet the requirements for general public use may still be land applied in accordance with permit Standard Conditions Part III.

12. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
001	100%	Annually	24 hr. composite	July

(a) Test Schedule and Follow-Up Requirements

- (1) Perform a single-dilution test in the months and at the frequency specified above. If the effluent passes the test, do not repeat the test until the next test period.  
Submit test results along with complete copies of the test reports as received from the laboratory within 30 calendar days of availability to the WPP, Water Quality Monitoring and Assessment Section, P.O. Box 176, Jefferson City, MO 65102.
- (2) If the effluent fails the test, a multiple dilution test shall be performed within 30 calendar days, and biweekly thereafter, until one of the following conditions are met:
  - (a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
  - (b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.
- (3) The permittee shall submit a summary of all test results for the test series along with complete copies of the test reports as received from the laboratory to the WPP, Water Quality Monitoring and Assessment Section, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.



C. SPECIAL CONDITIONS (continued)

12. Whole Effluent Toxicity (WET) tests (continued)

- (4) Additionally, the following shall apply upon failure of the third test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact WPP, Water Quality Monitoring and Assessment Section to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the Planning Section of the WPP within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.
  - (5) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.
  - (6) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.
  - (7) All failing test results shall be reported to WPP, Water Quality Monitoring and Assessment Section, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.
  - (8) When WET test sampling is required to run over one DMR period, each DMR report shall contain information generated during the reporting period.
  - (9) Submit a concise summary of all test results with the annual report.
- (b) PASS/FAIL procedure and effluent limitations:
- (1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level;  $p = 0.05$ ) than that observed in the upstream receiving-water control sample. The appropriate statistical tests of significance will be those outlined in the most current USEPA acute toxicity manual or those specified by the MDNR.
  - (2) To pass a multiple-dilution test:
    - (a) the computed percent effluent at the edge of the zone of initial dilution, Acceptable Effluent Concentration (AEC), must be less than three-tenths (0.3) of the  $LC_{50}$  concentration for the most sensitive of the test organisms; or,
    - (b) all dilutions equal to or greater than the AEC must be nontoxic. Failure of one multiple-dilution test is an effluent limit violation.

C. SPECIAL CONDITIONS (continued)

12. Whole Effluent Toxicity (WET) tests (continued)

(c) Test Conditions

- (1) Test Type: Acute Static non-renewal
- (2) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.
- (3) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.
- (4) When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.
- (5) Single-dilution tests will be run with:
  - (a) Effluent at the AEC concentration;
  - (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
  - (c) reconstituted water.
- (6) Multiple-dilution tests will be run with:
  - (a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
  - (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
  - (c) reconstituted water.
- (7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

**SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS**

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless more stringent methods are specified by the DNR, the procedures shall be consistent with the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms,

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at p≤ 0.05)
Test acceptability criterion:	90% or greater survival in controls

Test conditions for (Pimephales promelas):

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at p≤ 0.05)
Test Acceptability criterion:	90% or greater survival in controls